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ABSTRACT

A determination of the reading grade placement levels (GPLs) and final course grades of community college students in relationship to the GPLs of their assigned social science textbooks was the focus of a study at Citrus Community College (Florida). Dale-Chall readability placement levels were calculated for eight textbooks used in 19 classes of political science, sociology, and psychology, and Nelson-Denny Reading Test (Form C) scores were obtained for the 375 students in these classes. Also, 30 faculty were surveyed to determine their perceptions of textual GPLs. Results showed the average student had a GPL of 12.44, while texts averaged 11.3, with only one text above the average student level. Individual multiple regression coefficients indicated that the student GPI was a significant predictor of final course grade, and that the gap between student and textual levels was not a predictor for those who fell below the textual GPL. However, a positive gap between the student and textual GPLs was a significant predictor of the course grade. Faculty perceptions of textbook GPL were mixed, but accurate within the range of the texts (9-10 to 13-15) used in the study. (HT)

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A COMPARISON OF THE READABILITY OF COMMUNITY COLLEGE SOCIAL SCIENCE TEXTBOOKS WITH STUDENT READING LEVELS AND THE EFFECT ON ACADEMIC ACHIEVEMENT

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Community colleges are comprehensive institutions providing adult continuing education courses, community service courses, occupational education courses and academic education parallel to the first two years of university systems. An increasing number of students attend community college each year for a variety of reasons, and bring a diversified background and varied talents. By definition, the community college has an obligation to meet the educational needs of its clientele. One of the most fundamental tools universally employed by community college instructors is a textbook. Likewise, students regard a textbook as a primary learning source.

Three previous studies (Cline, McClellan, and Hagstrom) compared reading grade placement levels and the readability grade placement levels of the assigned textbooks. In all three studies, a majority of the students had reading grade placement levels below the readability grade placement levels of the assigned textbooks. The authors of these studies called for further research and educational involvement, by community college faculty members in general, not solely reading experts or remedial instructors. This research was prompted by the literature and the researcher's concerns for the community college student. It is contrary to the community college philosophy to exclude segments of the community college population from successfully completing courses because of inappropriate materials.

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The purpose of the study was to determine the reading grade placement levels of community/junior college students in relationship to the readability grade placement levels of their assigned social science textbooks, and determine the relationship of these variables with the grade in the course. The Dale-Chall readability grade placement levels were calculated for the eight social science textbooks employed in the nineteen class sections in the disciplines of political science, sociology and psychology. The Nelson-Denny Reading Test, Form C scores were returned for 375 of the students in these nineteen class sections. Cooperating faculty members supplied a copy of the final grades these students received in their classes. Additionally, a questionnaire was distributed to thirty full-time social science faculty members in an effort to determine their attitudes and perceptions of student reading levels, textbook readability, and textbook selection criteria and policies.

Textbook/Class Comparisons

The average student examined in the study had a reading GPL of 12.44. The average readability GPL of the eight social science textbooks was 11.3. The average student's reading GPL was 1.1 years higher than the readability GPL of the assigned social science textbooks. More importantly, of the eight textbooks utilized in the nineteen social science class sections, five precisely matched the average student's reading GPL with the textbooks readability GPL. Only one textbook of the eight was above the average student's reading GPL, and only two textbooks were below the average student's reading GPL.

Results

Of the 375 students examined in the study eighty-eight or 23 percent of the students had reading GPLs below the GPL of the assigned social science textbook, 198 students or 53 percent had reading GPLs above the readability GPL of the assigned textbook, and eighty-nine or 24 percent of the students possessed a reading GPL identical to the readability level of the assigned textbook.

The Pearson Correlation

The Pearson Correlation Coefficient was calculated by matching the independent variable X_3 (the difference between a student's reading GPL and the assigned textbook's readability GPL, also called the gap), with dependent variable Y (the grade in course): X_3 r Y.

The correlation coefficient of the eighty-eight students who possessed a negative gap (those whose reading GPL was below the readability GPL of the assigned textbook), was: $-X_3$ r Y = -0.079006. Although the coefficient was in the negative direction, with 86 degrees of freedom, the coefficient was not significant at either the .01 or the .05 level. Conclusion: The hypothesis, "as the gap in negative direction between a student's reading grade placement level and the readability grade placement level of the text increases, the academic achievement of the student decreases," must be rejected. In fact, if r^2 is the relationship of the two variances, less than one percent of a student's final grade is dependent upon the student's negative reading GPL in relation to the readability GPL of the assigned social science textbook.

The Pearson Correlation Coefficient was also calculated by pairing the students who had reading GPLs above the readability GPLs of the

assigned textbooks with their final grades in the course. The correlation coefficient of these 198 students was: $+X_3$ r Y = +.24292. With 196 degrees of freedom, the relationship between the students who had reading GPLs above the readability level of the assigned social science textbook and the final grades in the course was significant at both the .05 and .01 levels. Conclusion: In effect, a significant Pearson Correlation Coefficient between these variables demonstrates that as a student's reading GPL increases above the readability GPL of the assigned social science textbook, his final grade in the course improves.

Multiple Regression Analysis

A Multiple Regression Analysis was performed on the data for the eighty-eight students with a negative gap and the 198 students possessing a positive gap. Multiple correlation coefficients were derived to determine the degree of interaction between the two independent variables: X_1 (student reading grade placement level), and X_3 (the gap between a student reading GPL and the textbook readability GPL), with the dependent variable Y (the course grade). The following tables display all of the correlation coefficents.

The application of multiple regression analysis for these two predictor situations illustrates the magnitude of the effect these independent variables played in determining final course grades. For the eighty-eight students that had a negative gap between their reading grade placement level and the readability grade placement level of the assigned textbook, 14 percent of their final grade in the course was attributed to their reading GPL and the magnitude of their negative gap. The results of the F-ratio indicate that this is a significant predictor of

TABLE 11

MULTIPLE CORRELATION COEFFICIENTS FOR THE INTERACTION OF TWO VARIABLES WITH THE GRADES OF STUDENTS HAVING A NEGATIVE GAP

Independent Variable	R^2	Percent	Significant (*) .05	.01
X_1 (Student reading Grade Placement Levels)	.16	16	*	*
X_3 (Negative gap between student reading GPL and the textbook readability GPL)	-.02	-2		
TOTAL	.14	14	*	*

TABLE 12

MULTIPLE CORRELATION COEFFICIENTS FOR THE INTERACTION OF TWO VARIABLES WITH THE GRADES OF STUDENTS HAVING A POSITIVE GAP

Independent Variable	R^2	Percent	Significant (*) .05	.01
X_1 (Student reading Grade Placement Levels)	.021	2		
X_3 (Positive gap between student reading GPL and textbook readability GPL)	.034	3	*	
TOTAL	.055	5	*	*

the final course grade. However, the individual multiple regression coefficients indicate that only the student reading grade placement level (X_1), is a significant predictor of the final course grade, at the .05 and .01 levels. Similar to the results of the Pearson correlation, the conclusion is: the gap in the negative direction between student reading GPLs and textbook readability GPLs was not a predictor of a student's final course grade.

In reviewing the results of the multiple regression analysis for the 198 students who possessed a positive gap between their reading grade placement levels and the readability GPL of the assigned textbook, only 5.5 percent of a student's course grade can be predicted from the two independent variables, student reading GPLs and the positive gap. However, the results of the F-ratio indicate that these predictors working together were significant. Student reading levels account for only two percent of the final course grade and positive gaps account for three percent of the final course grade.

With a sample of 198 students, the X_1 regression coefficient (student reading levels) of .021 was not a significant predictor of final course grades. However, similar to the results of the Pearson correlation, at the .05 level of significance the following conclusions can be drawn: the positive gap between a student's reading GPL and the readability GPL of the assigned textbook is a significant predictor of academic success as measured by course grade.

Test for the Difference Between Means

In a previous section of the study, the Pearson Coefficient of Correlation was calculated for the eighty-eight students whose reading

GPL was below the readability GPL of the assigned textbook ($-X_3$) and the final course grades (Y), and also for the students whose reading GPLs were above the readability GPL of the assigned social science textbooks ($+X_3$), and the resultant grade in the course (Y).

The Pearson Correlation Coefficient measures the relationship between individual pairs of variables. A test for the difference between means measures a significant difference between groups. Table 13 illustrates the summary data of the three groups prior to the test for the difference between means. Groups A, B, and C, respectively, possess reading GPLs above, equal and below the readability GPLs of the assigned community college textbooks.

TABLE 13

AVERAGE GRADES OF STUDENTS WITH POSITIVE, NEGATIVE AND ZERO GAPS

Group	Gap (X_3)	N	Grade $\bar{X}$ (Y)
A	+	198	3.61616
B	0	89	3.47191
C	-	88	3.01136

Although all three mean grades are in the "C" range, 3.6, 3.5 and 3.0, is there a significant difference between the mean grades? Table 14 provides summary data of a test for the difference between the means of the three groups.

There is not a significant difference between the mean grades in course of the two groups of students that possess reading GPLs equal

TABLE 14

COMPARISON OF DIFFERENCE BETWEEN MEAN GRADES OF STUDENTS WITH POSITIVE, NEGATIVE, AND A ZERO GAP

Comparison Group	T	df	Significant (*) at .01
$M_B - I_A$	-1.213522	-	
$M_B - I_C$	2.917481	120	*
$M_C - I_A$	-4.3350	-	*

to and above the readability GPL of the assigned social science textbook.

There is a significant difference between the mean grades in course of the two groups of students whose reading GPL is above or below the readability GPL of the assigned social science textbook.

Likewise, there is a significant difference between the mean grades in course of the community college students that possess a reading GPL below, or equal to the readability GPL of the assigned social science textbook.

Conclusion

The treatment of this data suggests that, as a group, students who possess reading GPLs higher than the readability GPL of their assigned social science textbooks receive significantly higher grades than do students who possess reading GPLs below the readability GPL of their assigned social science textbook. Similarly, students who possess reading GPLs below the readability GPL of the assigned social science

textbook received significantly lower grades in course than students who possessed reading GPLs equal to or above the readability GPLs of the assigned social science textbook.

Professors' Questionnaire

The response of the professors to the questionnaire provided validity to two of the researcher's hypotheses. Community college instructors want the readability grade placement levels of the textbooks made available to the person or group selecting textbooks. All twenty-five faculty members concurred in their belief that a majority of the community college faculty members polled want the reading grade placement levels of their students made available to them. Twenty-one faculty members stated that they wanted student reading grade placement levels made available to them, whereas, none of the faculty members stated they did not want student reading GPLs made available, although four mentioned that it did not matter.

In response to the question, "What is the best method of textbook selection for your class?", eleven instructors stated that the best method was for each individual instructor to select their own textbook and twelve preferred a departmental consensus on a textbook. At Citrus Community College textbooks are selected campus-wide, by a consensus of the academic department.

Eighteen of the twenty-five instructors stated that they had an ample supply and variety of textbooks to choose from. Seventeen of the twenty-five stated that they had ample time to select a textbook.

The instructors had mixed perceptions of the textbooks. Three instructors placed their textbook in the tenth GPL, seven placed their

textbook on the eleventh GPL, six placed their textbook on the twelfth GPL, and five and three instructors placed their textbooks on the thirteenth and fourteenth GPLs, respectively. In general, the professors' perceptions of the textbook readability levels, placing them between the tenth and the fourteenth grade levels, are accurate within the range of the textbooks (9-10 - 13-15) utilized in this study.

Implications of the Research

Probably the most significant implications of the research are the lowering of textbook readability grade placement levels and the results of the multiple regression analysis.

The findings of this study indicate that during the past decade there has been a dramatic change in matching a community college student's reading GPL with the assigned textbook. Student reading GPLs have not changed significantly, but community college social science textbook readability GPLs have decreased significantly. The result is that an overwhelming majority of the students at Citrus Community College read at or above the readability GPL of the assigned textbook. The findings of this study are limited to an urban multi-campus community college in Florida. However, the results may imply a trend of lower readability levels of textbooks in community colleges across the country.

Perhaps, the most important influence in matching student reading GPLs with textbook readability GPLs is the concern of the dedicated community college professor. The results of the professors' questionnaire at least indicate that the majority of the community college professors polled would like to know student reading GPLs, textbook readability GPLs and, most importantly, are aware of the readability levels

of their present testbook. This change did not come about without their knowledge, consent, and/or preference. Textbook publishers are aware of this need. Prentice-Hall, Inc. has recently developed a computerized Dale-Chall readability formula. All community college textbooks are expected to "read out" at about the tenth grade level, or be modified.[1] Faculty members at Citrus Community College, and presumably at other community colleges across the country are being employed daily to reword university level texts in an effort to better match the needs of the community college student with more readable, thereby more marketable, texts.

Advertisements are delivered to community college faculty members daily announcing texts which have been revised and reworded to make them more readable to community college students.[2]

Another implication of the research is the results of the statistical treatments. Although students with reading levels below the readability levels of the assigned textbooks do not receive lower grades as the gap between reading levels and textbook readability increases, the variables are significant predictors of final grades.

Another implication of the research can be derived from Tables 9 and 10. Even though textbook readability grade placement levels have

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[1]Phone interview with Ollie Campbell, Social Science Textbook Marketing Manager, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 12 November 1976.

[2]Example: Brochure from Holt, Rinehart and Winston, Inc. entitled American Democracy, states: "High Readability--completely rewritten and revised to improve student comprehension without sacrificing content." At the very top of the page, indicating the importance of this concept above the others.

been lowered in recent years, there are some students who still have a sizable difference between their reading grade placement level and the textbook's readability grade placement level. Twenty-two students possessed reading GPLs more than three years below the textbook's readability GPL and six students possessed reading GPLs more than five years below the textbook's readability GPL. It is not recommended that textbook readability levels continue to decline. If textbook readability levels decrease, then the number and gap of students who have reading GPLs above the assigned textbook readability GPL will increase proportionately. At present, fifty students have reading GPLs at least three years above the textbooks' readability GPL, and 150 students have reading GPLs at least one year above the textbook readability GPL. Remedial programs are still needed to help students with low reading scores increase their reading grade placement level and perhaps to increase the reading grade placement level of all community college students so that average reading grade placement level is commensurate with their academic grade, thirteen or fourteen.

Another implication of the research on the local level stems from the responses on the professors' questionnaire concerning the availability of student reading grade placement levels. The readability grade placement levels of students are provided to an instructor at Citrus Community College at his/her request. The fact that a majority of the faculty members are not aware of this policy indicates that the service of providing student reading scores should be better publicized. Several professors would probably request this service if they were aware of its existence.

Recommendations for Further Study

Throughout the course of the study the researcher has become aware of some topics worthy of further study. One such study might examine a larger number of students with negative gaps in a field other than social science. Law, medicine, science, and mathematics texts may have higher readability levels producing a larger percentage of the students with a negative gap. Perhaps results of the proposed study might also reflect the downward modification of readability levels of texts in these fields also.

Another item for future study is the student who withdraws. Of the 723 students included in the study, seventy-five withdrew from a course. Of these seventy-five students, reading scores were available on 41 or 55 percent of them.

Table 15 illustrates the direction of the gaps of the students not completing the course.

TABLE 15

NUMBERS AND PERCENTAGE OF STUDENTS WITHDRAWING FROM COURSES WITH A POSITIVE, NEGATIVE, OR A ZERO GAP

Direction of the Gap	Number	Percent
Positive	18	44
Zero	16	39
Negative	7	17
TOTAL	41	100

It appears that a very small minority of the students (17%) withdrew from a course with a negative gap between their reading grade placement level and the readability grade placement level of the assigned textbook. Perhaps a future study could document the possible academic reasons a student states he/she withdraws from a course in comparison with their measured ability. Is the students' perceptions of the difficulty of a textbook or his/her perceptions of his/her reading grade placement level commensurate with his/her measured score?

A final topic for further study has been prompted by the research. In obtaining the final grades, it was readily noticeable that, in some instances, the average student grades, by section, were lower in some classes than others. The researcher would like to see additional studies comparing student grades with variables, such as, the sex of the student, sex of the teacher, the academic discipline of the course, and perhaps even the hour of the class session.

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